Global view

Human T lymphotrophic virus-I (HTLV-I) infection in patients with unclassifiable dermatitis in central Kerala, south India: a preliminary study

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Human T lymphotrophic virus-I (HTLV-I), a pathogenic virus, is the aetiology of adult T cell leukaemia/lymphoma (ATLL), and tropical spastic paresis (TSP).[1 2] It is endemic in Japan, the Caribbean islands, and Africa. It has also been reported from some places in India, from select populations in Israel, and other countries in the West. This virus is mainly spread vertically through the sexual route, through blood transfusions and sharing of needles.[1 2]

HTLV-I has also been associated with clinical conditions like infective dermatitis.[1 2] In countries with a high prevalence of HTLV-I in the general population, the prevalence of HTLV-I infection in these conditions is higher than in countries with a lower prevalence.

In India, HTLV-I infection has been reported in individuals with ATLL, TSP, and sexually transmitted infections (STI).[3–5] This infection has also been proved by molecular techniques.[6] Most of the cases of ATLL published from India are from the state of Kerala, south India.[6] Despite this fact, there are no systematic studies among the other risk groups in Kerala. We have conducted a preliminary serostudy to confirm the presence of this virus in patients with dermatitis of unknown aetiology and among individuals with STI in central Kerala. Patients with unclassifiable dermatitis were selected in order to see if dermatitis could be aetiologically related to HTLV infection especially when HTLV induced infectious dermatitis is reported from other parts of the world.[1 2]

PATIENTS

Forty five consecutive patients who attended the dermatology clinic of Medical College Kottayam between April 1998 and April 1999 with extensive dermatitis that could not be clinically classified into any known clinical entity were included in the study. Before inclusion at least three blinded dermatologists examined these patients independently to make a definite clinical diagnosis. All these patients had at least 30% of their skin affected by dermatitis. All patients underwent detailed clinical examinations and investigations including haemogram, chest *x* ray, and ultrasound abdomen to rule out any co existing systemic pathology.

Samples were also collected from 37 consecutive patients who presented to the sexually transmitted disease (STD) clinic of Kottayam Medical College with a history of promiscuous behaviour or being a contact of a patient with at least one STD.

METHODS

Serum/plasma samples were screened for anti-HTLV-I antibody by a gelatin particle agglutination test (PAT) (Serodia HTLV-I, Fujirebio, Tokyo, Japan) at the Department of Clinical Virology, Christian Medical College Hospital, Vellore. Samples that reacted with the sensitised particles (at a dilution of 1/16) and not the unsensitised particles were considered reactive. These samples were then titrated by end point dilution. Samples that reacted with both sensitised and unsensitised particles were considered indeterminate. Reactive and indeterminate samples were confirmed by an immunoblot (InnoLIA HTLV-I/II, Innogenetics, Belgium).

RESULTS

From the dermatitis group 45 individuals were tested (male:female = 25:20). The average age was 32.9 (range 6–72 years). The STD group consisted of 37 individuals. The majority were male (male:female ratio 29:8). The average age was 27.7 years (range 17–60 years).

Among 37 STD clinic attendants, none had antibody to HTLV-I, while two individuals (4.4%) of the dermatitis group had antibody to HTLV-I. The first was a male of 68 years (titre of 256) who presented with multiple ill defined recurrent erythematous plaques all over the body which subsided without any medication. Histopathology of the lesional skin of this patient showed non-specific dermatitis. The second patient was a female of 65 years (titre of 8192) with generalised dermatitis. Histopathology of this patient showed dense collection of lymphocytes in the upper and deep dermis. There were no atypical cells among the infiltrates. Unfortunately, both these patients were lost to follow up.

DISCUSSION

There are a few case reports of HTLV-I induced ATLL and TSP from India.[3 4 6] There are regional variations in the endemicity of HTLV-I in the Indian subcontinent itself. It is known to be present in the states of Kerala, Tamil Nadu, and Andhra Pradesh in south India.[3–6] While a study on samples from Uttar Pradesh (north India) and West Bengal (north east India) failed to demonstrate the presence of HTLV-I,[7] a study from Delhi (north India) documents prevalence in 6% of HIV seronegative and in 30% of HIV seropositive blood donors by a particle agglutination test.[8] Though a high seropositivity has been reported among the blood donors by the screening test, the antibody titres were low, and a confirmatory test was not performed on these samples. Hence, the true seropositivity in this area is not known.

HTLV-I infection is also associated with sexual transmission in the Vellore region (Tamilnadu state) of south India.[5] We have found evidence of vertical transmission of HTLV-I from Kerala and Andhra Pradesh.[9] Similarly, we have detected the presence of this virus among patients with ATLL and CTCL from Kerala.[9]

HTLV-I is seen associated with a poorly defined dermatitis (infective dermatitis) in the Caribbean countries.[10] This entity is not reported from India. HTLV-I also has been reported to produce various types of skin rashes. Though cases of ATLL have been reported from Kerala, there are no studies on the association of this virus and dermatitis from this region. Our study proves the presence of antibodies to this virus in a subset of individuals with unclassifiable dermatitis in Kerala.

The first patient showed recurrent erythematous plaques with massive collection of lymphocytes in the dermis. This patient did not have evidence of malignancy and, unfortunately, she was lost to follow up. The second patient had generalised dermatitis. Biopsy from this patient showed a dermatitic pattern, which can be an early manifestation of cutaneous T cell lymphoma. There are some anecdotal studies which report cases of HTLV-I associated cutaneous T

cell lymphoma with, serological response, though molecular demonstration of HTLV-I sequences is possible.[11 12] We have also found a lack of seroreactivity to HTLV-I both in cases of haematological malignancy and among family members of infected individuals.[9] If the same is true in infectious dermatitis, serodiagnosis may give a low estimate of HTLV-I infection. In addition, the prevalence of HTLV-I infection in cases of infectious dermatitis is high in areas with a high prevalence of HTLV-I infection in the general population. As south India is not an area where the seroprevalence of HTLV-I is high,[9] the low seroprevalence seen here among individuals with dermatitis may be a reflection of the low seroprevalence of infection in the community.

We failed to find evidence of HTLV-I among individuals with STI. This probably is a reflection of the small sample size as this is a pilot study. In the Vellore region of the neighbouring state of Tamil Nadu, a prevalence of 1.1–1.2% has been reported among individuals with STI while among commercial sex workers a prevalence of 3.8% has been reported.[5 9] A larger study on STI patients is required to identify the prevalence in this group.

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REFERENCES

1 **Cann AJ**, Chen ISY. Human T cell leukemia virus types I and II. In: Fields BN, Knipe DM, Howley PM, *et al*, eds. *Virology*. Philadelphia: Lippincott-Raven, 1996:1849–80.
2 **Cleghornand FR**, Blattner WA. Human T cell lymphotrophic virus-I HTLV infection. In: Homes KK, Mardh PA, Sparling PF, Lemon SM. *Sexually transmitted infections*. 1999:259–67.
3 **Chandi M**, Babu PG, Saraswathi NK, *et al*. HTLV-I infection in patients with leukemia in southern India. *Lancet* 1991;**338**:830–1.
4 **Babu PG**, Gnanamuthu C, Saraswathi NK, *et al*. HTLV-I associated myelopathy in south India. *AIDS Res Hum Retroviruses* 1993;**9**:499–500.
5 **Babu PG**, Ishida T, Nesadoss J, *et al*. Prevalence of HTLV-I/II antibodies in HIV seropositive and seronegative STD patients in Vellore region in southern India. *Scand J Infect Dis* 1995;**27**:105–8.
6 **Nerurkar VR**, Babu PG, Song KJ, *et al*. Sequence analysis of human T cell lymphotropic virus type I strains from southern India: gene amplification and direct sequencing from whole blood blotted onto filter paper. *J Gen Virol* 1993;**74**:2799–805.
7 **Roy M**, Das MK, Ishida T, *et al* Absence of HTLV-I infection in some Indian Populations. *Indian J Med Res* 1994;**100**:160–2.
8 **Malhotra VL**, Lakshmy A. HTLV-I in HIV seropositive Indian blood donors. *J Commun Dis* 1996;**28**:270–2.
9 **Ramalingam S**, Kannangai R, Prakash KJ, *et al*. A pilot study of HTLV-I infection in high risk individuals and their family members from India. *Indian J Med Res* 2001;**113**:201–9.
10 **La Grenade L**, Manns A, Fletcher V, *et al*. Clinical, pathologic, and immunologic features of human T-lymphotrophic virus type I-associated infective dermatitis in children. *Arch Dermatol* 1998;**134**:439–44.
11 **Pancake BA**, Zucker-Franklin D. HTLV tax and mycosis fungoides. *N Engl J Med* 1993;**239**:580.
12 **Pancake BA**, Wassef EH, Zucker-Franklin D. Demonstration of antibodies to human T cell lymphotrophic virus-I tax in patients with the cutaneous T cell lymphoma, mycosis fungoides who are seronegative for antibodies to the structural proteins of the virus. *Blood* 1996;**88**:3004–9.